# Motion Responding Electrically Blinking Jump Rope

This invention is related to an electrically blinking jump rope.

## BACKGROUND OF THE INVENTION

In order to create a desired blinking pattern in the light sources for a fun electric jump rope, many attempts have been made to supply the electric power to these light sources. It has taken great difficulty to provide electric power to the light sources in compliance to the fluctuations of using a jump rope, from being swung in the air to the impact of the ground. In addition, the prior art devices have not satisfactorily solved the problem to prevent the wind-up of the jump rope between the handles while it continuously supplies electric power to the light sources.

## FIELD OF THE INVENTION

This invention relates to an electrically blinking jump rope, which responds to the jumping motion of a user by utilizing two electrical blinking connectors and two electrical rotating connectors.

## Description of the Prior Arts

U. S. Patent: 5,087,034 to Solis illustrates a jump rope which is made of a hollow, translucent, and flexible plastic tube with a plurality of light sticks (CYALUME) inserted into the tube. These light sticks glow when they are activated as the rope turns. The light sticks may readily be removed and replaced when they are expended. U. S. Patent 5,389,056 to Ricker illustrates a jump rope assembly with illuminated components comprised of a pair of handles, where each handle has an inboard end and an outboard end. One of the handles is hollow and contains electrical components, such as a battery, electrical contacts and an on/off switch. U. S. Patent 4,776,585 to Maleyko, et al. illustrates an electrically lighted jump rope with a flexible tube that transmits light through each end of the rotationally mounted handles. U.S. Pat. No. 4,529,193 to Kuhnsman discloses a lighted jump rope, where a set of optical fibers of varying lengths extends into the rope from each of the handles. Energized by a battery, a switch arrangement connected to a lamp in the handle lights each set of fibers. U.S. Pat. No. 1,820,681 to Schmalbach discloses a jump rope, which is provided with a plurality of spaced lamps that are placed exteriorly on the rope and are then surrounded by balloons. Batteries in the handles energize the lamps. The jump ropes do not blink, but a continuous light emits from the lamps when turned on. French Pat. No. 2,276,069 discloses an illuminated jump rope comprised of a transparent or translucent tube with a pair of handles rotationally mounted at opposite ends. The lighting circuit includes a plurality of colored lamps disposed in the tube.

None of prior models disclose electrically blinking jump ropes that automatically respond to the jumping motion of a user as shown in this invention.

## SUMMARY OF THE INVENTION

It is the purpose of this invention to provide a jump rope electrically blinking along with the rotation and jumping motion of a user. The electrically blinking jump rope is comprised of; 1) a flexible tube of partially transparent material, 2) handles rotationally connected to the flexible tube at each end, 3) two rotational electrical connector, 4) a power switch on one of the handles, 5) lightning circuit comprised of three electric wires, plurality of LEDs connected to two of the three electric wires, and a blinking connector. The rotational electric connectors enable a constant power supply even at high-speed rotations and through severe motions of the jump rope. The power supply is activated by a turn of the switch on one of the handles. The blinking connector is a liquid metal/metal ball connecting a light bulb that has two sets of (+), (-) leads at the end of the bulb. The liquid metal/metal ball oscillates in the bulb along with the motion of the user, such as jumping. The rotational electric connector and the bulb blinking connector are endurable for the long and repeated rotational motions of the jump rope.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows a perspective view of the jump rope model.

Fig. 1-1 shows an enlarged view of the jump rope handle.

Fig.1-2 shows an enlarged view of the rotating electric connector for the jump rope.

Fig. 2 shows an electrical circuit for blinking jump rope.

Fig. 3 shows a schematic drawing of the blinking connector of this model.

# DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 shows a perspective view of the jump rope model (1). The electrically blinking jump rope (1) is comprised of: a flexible tube that is made of partially transparent materials (2); handles (3) containing batteries (4) for the electric power source that are rotationally connected at each end; two rotational electrical connectors (5); a power switch (6) on one of the rotational electric connectors (5); lightning circuits comprised of three electric wires (7, 8, 9) with a plurality of LEDs (10) connected to two of the three electric wires; a blinking connection (11); and circuit boards (12) for electric connections.

Fig. 1-1 is an enlarged view of the handle (3) of the jump rope (1). The handle (2) has an empty space (13) for receiving batteries (4). A spring (13) connects (-) the battery (4) to a thin copper ribbon (5), which is extended to the upper end (14) of the handle and forms a ring (15) along the edge of the upper end (14). This (-) copper ribbon is connected to a (-) copper ring (16), which is formed at the upper surface (17) of the handle cap (18). (+) Electrodes (19) of the battery are directly connected to a bolt (20) penetrating the center of the handle cap (18). This bolt is engaged to a rotating nut (21) in Fig. 1-2. Fig.1-2 is an enlarged view of the rotating electric connector (5) of the jump rope (1). The rotating electric connector is comprised of a lower part (22), an upper part (23), and a pin (24). The pin (24) pivotally connects the two parts through holes (25), (26), and (27) to connect the arms onto the upper part (23). A pin (28) for connecting (-) is inserted into a hole (29) developed trough the lower part (22) to

connect the (-) copper ring (16) and (-) copper arm (30) to the upper part (23). The rotating nut (21) is connected to the (+) copper terminal (31) inserted into the upper part (23). The (+) copper arm and the (-) copper arms are connected to the (+) connecting point (31) and the (-) connecting point (32), respectively on the connection board (12) in the upper part (23) as shown in Fig. 2.

Fig. 2 is an electrical circuit (33) for the blinking jump rope. The circuit is comprised of: (1) three wires (7), (8), (9); (2) plurality of LEDs (10) connecting two of the three electric wires (7), (8), (9); a blinking connector (11); and circuit boards (12) for electric connections. One line (7) is connected to a (+) electrode with an on/off switch (34) and a (-) electrode (35) to the other handle.

When the on/off switch is connected, i.e. turned "ON", an electric circuit circulates from the (+) electrode of (31) the switch (34), to the (-) electrode of (35) in order to pass through the batteries (4) of Fig. 1-1, which are connected to the screw electrode (20) of Fig. 1-1, which is then again connected to (+) copper terminal (36). The electric blinking connectors (11), which are connected to the electric line (9), pass through the LED (10), connected to the other electric line (8) that is connected to a (-) copper terminal (32), and then is established.

Once an electrical circuit is established, the blinking connector (11) works as a temporary on/off switch. Fig. 3 is a schematic drawing of the blinking connector (11) of this invention. It is comprised of two sets each of two filament leads (37), which is located at the opposite side of the small-vacuumed glass ball, a liquid metal drop/metal ball (38) connects and disconnects the two filament leads (37) by the motion of a jump rope user. The liquid metal drop/metal ball (38) and the two filament leads (37) are embedded in a small-vacuumed glass ball (39). When the liquid metal drop/metal ball

(38) is apart from both sets of the filament leads (37), the electrical circuit is established above the disconnection and the LEDs (10) will turn off. When the liquid metal drop (38) is contacted with any set of the filament leads (37), the LEDs will then turn on. The motion of the jump rope user (1) will let the liquid metal drop/metal ball (38) oscillate in the vacuumed glass ball (39) and let the LEDs blink. In Fig. 2, the leads (37) of the electric blinking connector (11) are serially connected to the diodes (40). This serial connection renders more frequent blinking of LEDs (10).